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# State of the Watershed Report

Red Hill Creek  
Watershed Planning

## Participants

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# Many Thanks

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# Introduction

THE RED HILL CREEK WATERSHED is situated in the Region of Hamilton-Wentworth and drains into Hamilton Harbour. Its boundaries represent the area of land that drains into the Red Hill Creek and its tributaries, Hannon Creek, Davis Creek, and Montgomery Creek. These boundaries include portions of three municipalities: The City of Hamilton, The City of Stoney Creek and the Township of Glanbrook.

A watershed is the land drained by a river or creek and its tributaries. In urbanized parts of this watershed the boundaries include the areas serviced by storm sewers that discharge to the Red Hill Creek. In less urbanized parts of the watershed, the boundaries include lands where rain and snowmelt drain into the tributaries of the Creek.

This State of the Watershed Report has been prepared as part of a Watershed Planning process for the Red Hill Creek. It presents what is known about air, land and water as well as important conclusions about environmental conditions in the watershed. The Report represents the combined knowledge and expertise of participants in the Watershed Planning process and a team of technical consultants. Based on the information provided here, the participants have developed a list of actions that can be taken in the Watershed in the next two to three years to address some of the key issues. These actions will be published as part of the Red Hill Creek Watershed Plan.

The Red Hill Creek Watershed is an ecosystem that has endured for thousands of years and it will continue to face many stresses as a result of the surrounding use of the land for housing, industry and commerce. In the early part of this century, for example the Red Hill Creek Valley was cleared for agriculture and Albion Falls at the Escarpment was the site of a grist mill. The Valley is now completely revegetated showing few signs of past agricultural activities. More recently the agricultural areas on the Mountain have been replaced, for the most part, with houses, retail and industrial businesses. This has resulted in changes to habitat as forests have been cleared and streams buried. The creeks have experienced increases in the amount and intensity of runoff from rain storms as hard surfaces have replaced vegetation.

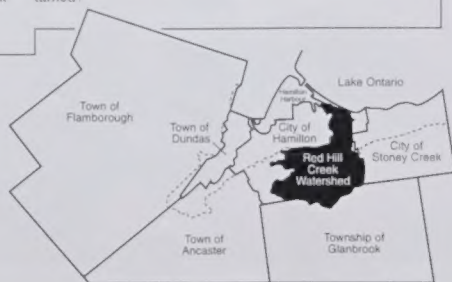
The ability of the Watershed to sustain itself and survive the stresses being placed on it will depend on many factors. Most important is a knowledgeable community dedicated to ensuring that its most significant features are not lost and important features are maintained and restored where possible. The community as a whole benefits from healthy streams and diverse habitats for fish, birds, insects and reptiles. The question that we should all be asking is "What role do citizens, private interests and governments in the Watershed play in ensuring a balanced and sustainable ecosystem is maintained?"

The purpose of this report is to share information with all residents and visitors to the Watershed in an effort to promote stewardship and partnerships between individuals, community groups, interests groups, and all levels of government. Through a common understanding of the problems that we face and the opportunities available to us, it may be possible to change attitudes, about how we view our surroundings and to develop innovative ways to contribute to the quality of life.

A series of detailed technical reports are available for those who require more specific information. These reports have been placed in the following locations:

- Central Library, Municipal Reference Section, City of Hamilton
- City of Stoney Creek Library
- Sherwood Library, Upper Ottawa Street, Hamilton
- Canadian Centre for Inland Waters Library
- Planning Department, 7th Floor, Hamilton City Hall
- Engineering Department, Stoney Creek City Hall
- Clerks Office, Township of Glanbrook
- Special Projects Office, Regional Municipality of Hamilton, 25 Main Street West

If you are interested in viewing these reports ask for the Red Hill Creek Watershed Technical Background Reports.

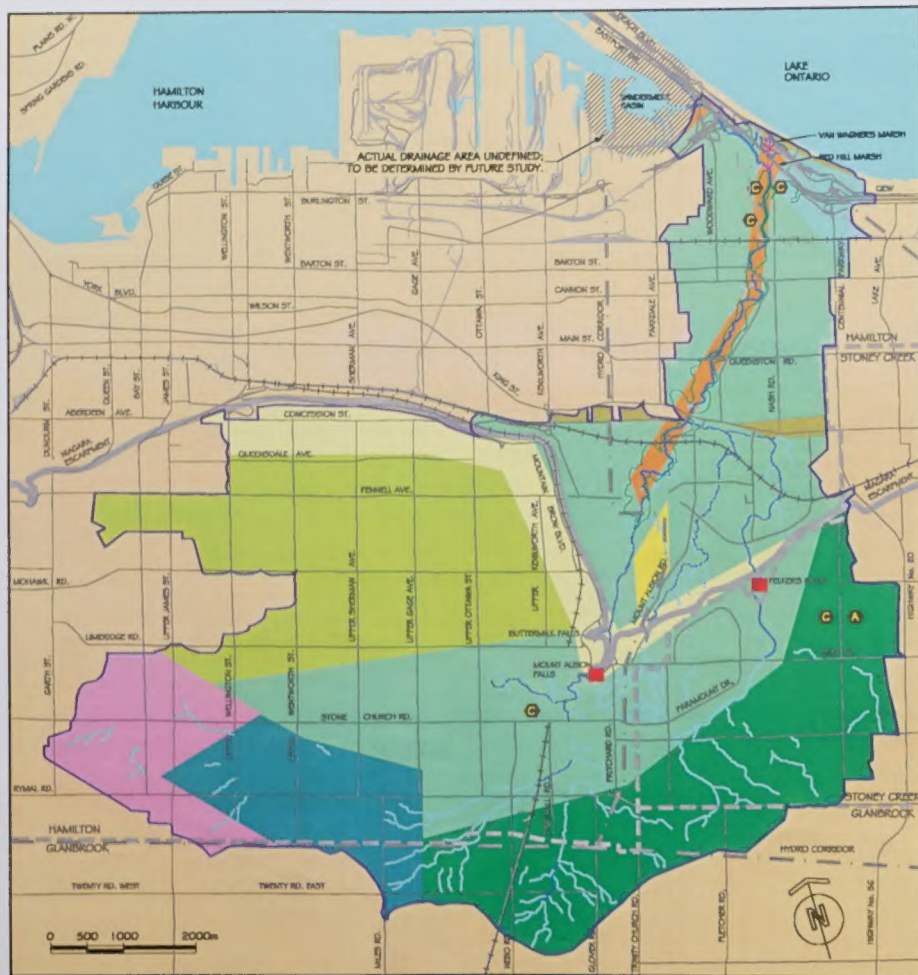




# SOILS

## LEGEND

- CLAY
- SILT
- SAND
- CLAY TILL
- CLAY OR CLAY TILL
- SILT OR CLAY TILL
- SILT OR CLAY
- SAND, SILT OR CLAY OVER SHALLOW BEDROCK
- SAND AND GRAVEL
- SILT/SAND ALLUVIUM
- REGIONAL EARTH SCIENCE AREA (AREA OF NATURAL SCIENTIFIC INTEREST)
- CLOSED LANDFILLS
- ACTIVE LANDFILLS
- PROVINCIAL SIGNIFICANT WETLANDS
- INTERMITTENT WATERCOURSES
- PERMANENT WATERCOURSES
- TOP OF VALLEY



### Why this theme is important

The composition of the soil and bedrock, as well as the overburden thickness and drainage characteristics influence all themes studied in a watershed planning exercise.

# Soils and Geology

## What We Know:

- Soil in the Watershed is predominantly clay till, with local deposits of silt at the southwest limits, clay at the southeast, and fine sand on the Escarpment slope.
- Alluvial soils (creek deposits) line the base of the Red Hill Creek Valley.
- Above the Escarpment, dolostone bedrock lies at depths typically less than 5 m but locally up to 12 m
- Below the Escarpment, shale bedrock lies at typical depths of 1 to 10 m, 1 to 3m in the Creek valley and up to 30 m at the Escarpment base.

## What This Means:

- Erodibility of the soils is typically low, except where there are silt and fine sand deposits.
- The permeability of the clay deposits and bedrock below the Escarpment is relatively low which limits surface water infiltration and the rate of groundwater movement.
- Thinner deposits above the Escarpment are likely to be fractured and exhibit higher permeability, infiltration and groundwater movement characteristics.
- Slopes are typically stable except where subjected to active erosion by water flow in the Creek. The above characteristics of the soil means that there are few constraints for development. Because the bedrock is close to the surface in some areas, blasting may be required during construction.

## How Does This Connect to Other Themes?

- Soil permeability affects the rate of groundwater movement, contaminant migration, infiltration and surface water runoff.
- Erodibility and stability affect stream morphology and water quality.
- Land use and vegetation reflects soil type, depth and drainage characteristics.

## Key Sources of Information and Data: Soils and Geology

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4. Telford, P.G., *Paleozoic of the Grimsby Area*, Ontario Division of Mines, Map 2343, 1976.
5. Telford, P.G., Bond, I.J., and B.A., *Paleozoic Geology of the Hamilton Area*, Map 2336, 1976.
6. Topographic Map, Hamilton-Grimsby, Department of Energy, Mines and Resources, Map 30M/4 Edition 5, 1978.
7. Vos, M.A., *Drift Thickness Series, Grimsby Sheet*, Ontario Department of Mines, Map P536, 1969.
8. Various: *Geotechnical Investigation Reports from Peto MacCallum Ltd. and Regional Municipality of Hamilton-Wentworth files* (some 350 studies involving over 1000 testholes at various locations throughout watershed), 1960 to 1996.

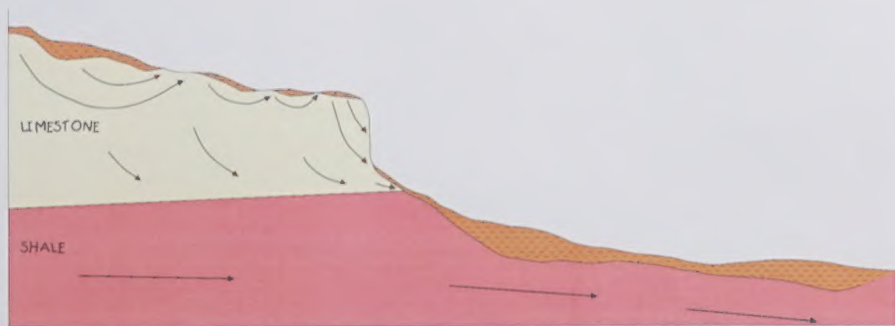
# GROUNDWATER

## Legend

- CLAY TILL OVERBURDEN
- GROUNDWATER PATHWAYS

SOUTH

NORTH



GROUNDWATER PATHWAYS

CLAY TILL OVERBURDEN

### Why this theme is important

Groundwater supports aquatic and terrestrial communities by discharging to streams and wetlands. Groundwater can provide a pathway for the subsurface movement of contamination. An understanding of the groundwater flow system is necessary to prevent or mitigate potential or existing water quantity and quality impacts.

# Groundwater

## What We Know:

- Groundwater movement above the Escarpment is different from groundwater movement below the Escarpment
- Most groundwater flow above the Escarpment percolates through a relatively thin layer of fractured clay, moves horizontally through the upper 5 - 10 m of fractured bedrock, and discharges to streams within a short distance of where it enters the soil. Close to the Escarpment, groundwater discharges to the Escarpment slopes as seepage areas. The remaining groundwater moves down through the deeper fractured bedrock into a more regional groundwater system that eventually discharges to Lake Ontario.
- Below the Escarpment, thicker soil (clay till) layers and dense bedrock reduce the infiltration of water to the groundwater table. Localized deposits of sands and gravels are areas where water could enter the groundwater or be discharged. There are a small number of drinking water wells in the southern most portion of the Watershed. The majority of development is serviced by municipal water.

## What This Means:

- Groundwater discharge to streams is significant above the Escarpment and may occur on a local scale below the Escarpment.
- The characteristics of groundwater movement above the Escarpment make groundwater susceptible to contamination particularly where the soils are thin.

## How Does This Connect to Other Themes?

- Groundwater can discharge to surface water to support aquatic resources or maintain wetlands. Below the Escarpment these linkages appear less sensitive but may exist on a local scale. The groundwater flow system can provide a pathway for the transmission of subsurface contamination.

## Key Sources of Information and Data: Groundwater

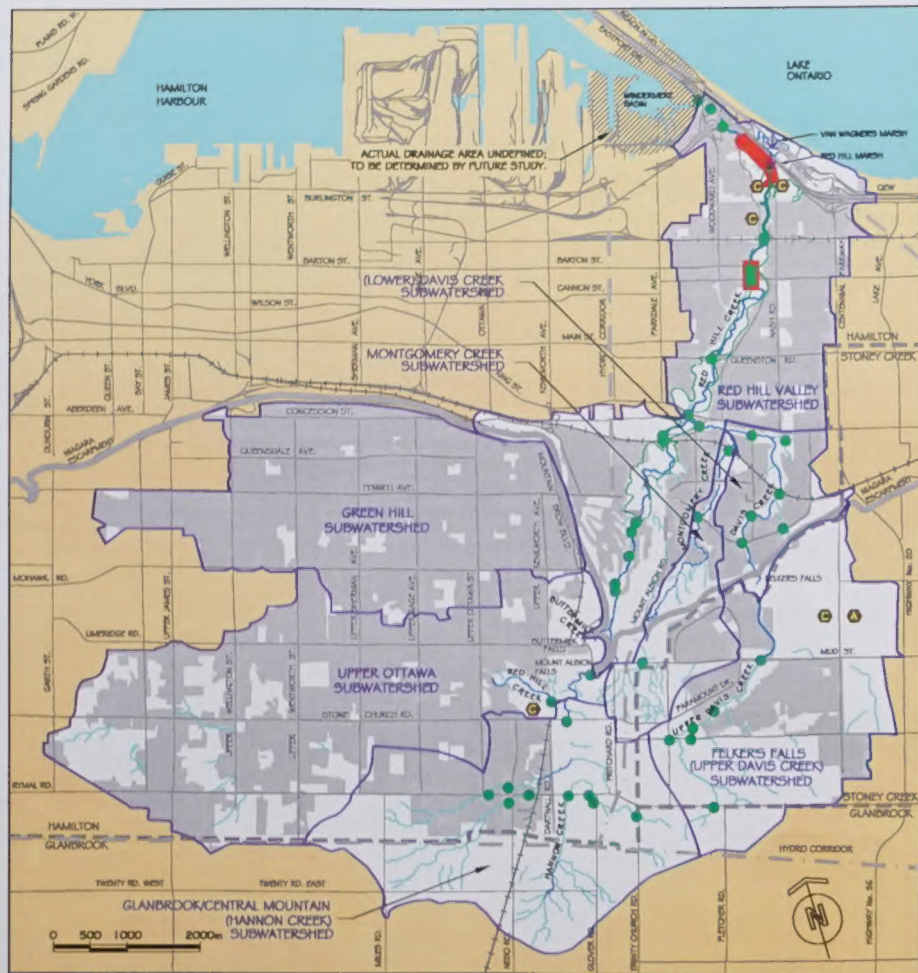
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2. Feenstra, B.H., *Bedrock Topography of the Grimsby Area, Southern Ontario*, Ontario Geological Survey. Map P.2401, 1981.
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4. Ontario Department of Mines, *Drift Thickness Series, Grimsby Sheet, Southern Ontario*, Map P.0536., 1969.
5. Ontario Ministry of the Environment and Energy, *Electronic Water Well Database*, Regional Municipality of Hamilton Wentworth, 1996.
6. Various hydrogeological and geotechnical consulting reports.



# SURFACE WATER

## LEGEND

-  INTERMITTENT WATERCOURSES
-  PERMANENT WATERCOURSES
-  FLOOD DAMAGE POTENTIAL FOR ROADS
-  STRUCTURES AND BRIDGES
-  CLOSED LANDFILLS
-  ACTIVE LANDFILLS
-  PROVINCIAL SIGNIFICANT WETLANDS
-  DEVELOPED AREAS
-  TOP OF VALLEY





### Why this theme is important

The flow of stormwater runoff from land surfaces and through watercourse systems effects many physical features and processes such as stream form, and transport of sediments and pollutants. These processes are also linked to many of the biological resources within the Watershed.

# Surface Water

## What We Know:

- There are seven distinct subwatersheds which make up the Red Hill Creek Watershed, each with its own land use and drainage system characteristics.
- Approximately 60% of the Watershed has urban type drainage (i.e. rain is either collected or conveyed in storm sewers, catchbasins, roadways, or channelized watercourses). Of this, over 45% is drained by Combined Sewer Systems (CSS) which convey both storm runoff and sanitary waste. There are five Combined Sewer Overflows (CSO) to the Red Hill Creek, where excess flow from the CSS enters the Red Hill Creek during severe rainfall events. The remaining 55% of the urbanized Watershed drains via Separate Storm Sewers Systems (i.e. no connection to sanitary sewer system) which discharge to creeks or streams.
- There are few natural storage sites for stormwater (i.e. wetlands, pools, and other depressions of significance), because the Watershed is highly urbanized. Urbanization of the Watershed has increased the frequency of flooding.
- Significant flood potential exists at some of the major roadway crossings of the Red Hill Creek Valley, particularly at the Q.E.W.

## Key Sources of Information and Data: Surface Water

1. Paragon Engineering, *Effect of Proposed North-South Expressway on Peak Flows and Levels in Lower Red Hill Creek*, November 1983.
2. Delcan, *Report on Municipal Services - Heritage Green*, 1984, Revised, 1988 & 1991.
3. Philips Planning and Engineering, *Mountain East-west and North-South Transportation Corridor - Drainage Study - Final Report*, July 1989.
4. Philips Planning and Engineering, *King Street Interchange - Detailed Hydraulic Analysis*, August 1989.

## What This Means:

- Developed areas provide fewer opportunities for management of stormwater quantity than areas that are yet to be developed.
- Extensive urban drainage systems and lack of naturally occurring storage results in rapid increases (and decreases) in the amount of water within the main branch of the Red Hill Creek.
- Frequent stream flooding has increased the rates of erosion, and decreased the overall stream stability.
- Increased urban expansion will have relatively minor effects on peak flow rates within the main branch of the Red Hill Creek, but is already having an effect on other tributaries to the main branch.
- Tributaries such as Hannon Creek, Upper Davis Creek and Upper Montgomery Creek where there is still significant development to occur, will exhibit higher increases in peak flows after development if there are no stormwater management controls. Storm-water management controls are needed for existing drainage systems and to accommodate future changes.

## How Does This Connect to Other Themes?

- The amount of water in a system, how it is stored after a rainfall event, the flooding regime, and the baseflow of the creeks, all affect the physical processes and biological nature of the Watershed. Some terrestrial habitats benefit from the current flooding while others, including fish habitat, are degraded.
5. Philips Planning and Engineering, *Hydraulic Analysis and Detailed Design of TH9/B to north of Queenston Road*, November 1989.
  6. Falcone Smith Associates, *Functional Drainage Report*

*Redhill Vista Subdivision*, Stoney Creek, Ontario, February 1990.

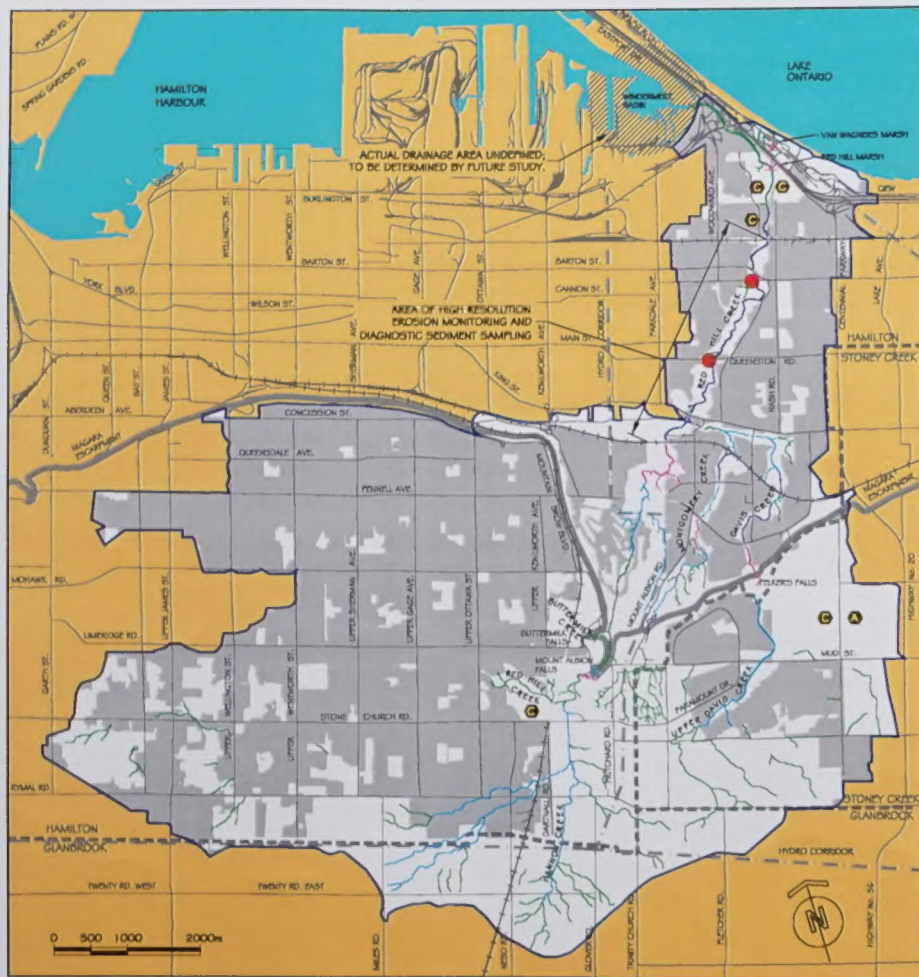
7. Paul Theil Associates, *Beak Consultants, Regional Municipality of Hamilton-Wentworth, Pollution Control Plan*, December 1991.
8. Philips Planning and Engineering, *Drainage Stabilization and Assessment Study Implementation Plan*, Red Hill Creek, November 1992.
9. Parker Consultants, *Erosion Assessment Red Hill Creek Tributary at the Glendale Golf and Country Club*, August 1993.
10. Philips Planning and Engineering, *Darnall Road Interchange, Stormwater Management*, November 1993.
11. Philips Planning and Engineering, *Redhill Vista/Albion Mills Estates, Class Environmental Assessment, Stormwater Management*, Summary Report, June 1996.
12. Philips Planning and Engineering, *Montgomery Creek, Class Environmental Assessment, Stormwater Management*, August 1997.
13. Philips Planning and Engineering, *Rymal Road - Red Hill Creek, Stormwater Management Class Environmental Assessment*, Summary Report, December 1995.
14. Gartner, Lee, *Taro East Quarry Environmental Assessment - Surface Water Impact Assessment*, prepared for TARO Aggregates Ltd., 1995.
15. Ng, Howard & Jiri Marsalek, 1988, "Stormwater Discharges to Hamilton, Harbour."
16. Ministry of Natural Resources, 1986, "Technical Guidelines for Flood Plain Mapping."
17. Water Survey of Canada, "Fifteen minute, hourly and daily discharge data for Gauge 02HA014, and Gauge 02HA023," Environment Canada, 1988, 1995, 1996, 1997.
18. Ontario Climate Centre, "Meteorological Data," Environment Canada, 1988, 1990, 1995, 1996.
19. Regional Municipality of Hamilton/Wentworth, "Rainfall Data," Environment Department Combined Sewer Overflow Abatement Program, 1995, 1997.
20. Heagy, A.E., 1995, *Hamilton-Wentworth NATURAL AREAS INVENTORY*, Volume I, Hamilton Naturalists' Club, prepared for Hamilton Regional Conservation Authority.

# STREAMS

## LEGEND

### SENSITIVITY TO EROSION

- EXTREME
- HIGH
- MEDIUM
- LOW
- BEST (LOW) SAMPLING LOCATIONS
- CLOSED LANDFILLS
- ACTIVE LANDFILLS
- PROVINCIAALLY SIGNIFICANT WETLANDS
- DEVELOPED AREAS



### Why this theme is important

Each stream has a distinct signature in terms of form and function which changes and evolves over time. A stream's characteristics are influenced by geology, climate and land use.

# Streams

## What We Know:

- The streams in the Watershed are characterized into six types which have different sensitivities to change
- With the exception of the falls at the Escarpment (Falkers, Albion and Buttermilk), most stream types in the Watershed are low gradient, meaning they are relatively flat
- Streams move and erode their banks as part of their evolution. The stability and sinuosity (the degree of movement back and forth across the flood plain) of all streams are influenced by bedrock, soils, the amount and velocity of water, gradient and the extent to which the stream or vegetation along the stream has been modified by humans
- Many streams above the Escarpment are intermittent (water flows for only part of the year)
- Due to urbanization, previous removal of stream bank vegetation, channelization, and changes in storm flows, portions of the Red Hill Creek, Davis Creek and Montgomery Creek below the Escarpment are highly unstable and degraded, i.e. there is evidence of high rates of erosion. The rate of erosion in Red Hill Creek is greater than typically expected in a stable stream of similar geology. This area is being intensively monitored for sediment movement and erosion since the other areas could degrade in a similar manner over time

## What this Means:

- Accelerating erosion has the potential to threaten existing buildings and infrastructure within and adjacent to the Valley. This could result in costly maintenance and erosion protection works
- Changes in the creeks have changed habitat within and adjacent to them
- The creeks will continue to erode at a higher rate than normal unless the volume and velocity of stormwater, and the forms of the creeks are modified

## How Does This Connect to Other Themes?

- The stability of a stream affects the character of the floodplain, stream bank vegetation, fish and aquatic habitat. It is influenced by the volume and velocity of water discharging into the stream which is related to the hard surfaces in the watershed, as well as the amount, maturity and type of streambank vegetation
- Some unique floodplain plant communities are dependant on frequent flooding whereas others may be destroyed by high and frequent flows. Fish habitat may be degraded or removed. Recreational trails adjacent to the Red Hill Creek and its tributaries could be affected by erosion

## Outstanding Questions:

- Streams in urbanized watersheds are complex. There is limited knowledge available on how to stabilize them, therefore field monitoring is ongoing in order to understand the current problems more fully and to be able to develop solutions







### Key Sources of Information and Data: Streams

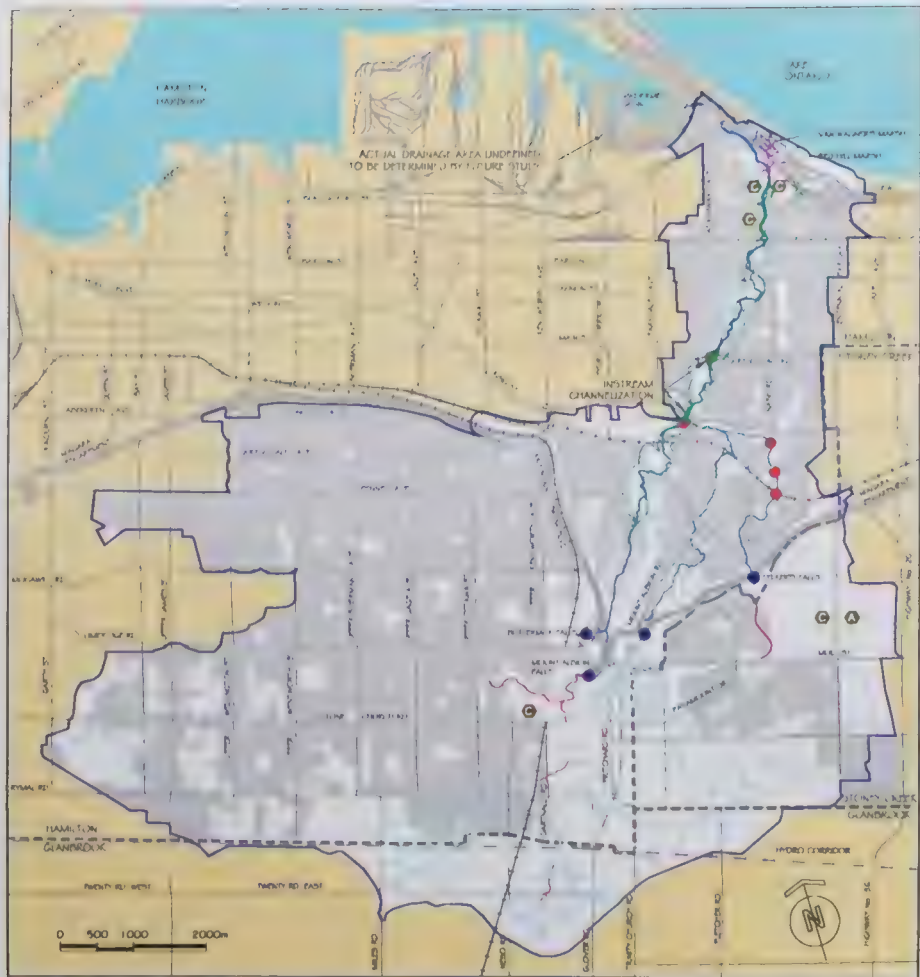
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2. Annable, W.K., *Database of morphology characteristics of urban streams in southern Ontario*, Ontario Ministry of Natural Resources, Interim Report, 1995.
3. Environment Canada, *Fifteen minute stage/discharge data Gauge 02HA014 - Red Hill Creek at Hamilton*, Environment Canada, Monitoring and systems branch, Guelph, Ontario, 1990.
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6. Ontario Ministry of Natural Resources, *1:10000 Time series air photos*.
7. Hamilton Region Conservation Authority, *Environmental Impact of a 108" Storm Sewer Outfall into tributary of Red Hill Creek in the City of Hamilton*, March 1977.
8. DiCrescenzo, R., Hatanaka, D., and Lee, W., *Fluvial Geomorphology Study of the Red Hill Creek*, April 1996.
9. Stead, V., *Channel Erosion in the Upper Red Hill Creek Valley*, April 1996.

## FISHERIES

LEGEND

- INTERMEDIATE WATER, FISHES  
PERMANENT WATER, RIBBON,  
POLYMERIZATION  
PERMANENT WATER, RIBBON,  
AQUEOUS POLYMERIZATION  
INTERMEDIATE CHANNELIZATION  
MAJOR FAULTS  
PARTIAL OR TEMPORARY  
BARriers TO FISH MIGRATION

-  CLOSED LANDFILLS
-  ACTIVE LANDFILLS
-  MOVING GULLY
-  SIGNIFICANT WETLANDS
-  TOP OF VALLEY
-  DEVELOPED AREA





### Why this theme is important

Fish are an important component of the aquatic ecosystem of the Watershed. The populations and aquatic communities is a key indicator of overall ecosystem health. A healthy recreational fishery generates social and economic benefits in a watershed. The Red Hill Creek Watershed also provides spawning habitat for some fish species which live in Hamilton Harbour and Lake Ontario.

# Fisheries

## What We Know:

- The Watershed is divided into two parts, the part below the Niagara Escarpment which is accessible to fish from Hamilton Harbour and Lake Ontario, and the part above the Niagara Escarpment, which is isolated from the downstream reaches. Fish cannot move past the Escarpment
- In the portion of Red Hill Creek which lies above Albion Falls, four fish species have disappeared over the last 12 years. Only Brook Sticklebacks and Goldfish have been captured in recent years
- The portion of the Watershed which lies between Albion Falls and the Harbour has a relatively diverse fish community (20 species documented), including species such as White Sucker, which live in Hamilton Harbour and Lake Ontario, but spawn in the tributaries
- Rainbow Trout and Chinook Salmon also migrate into Red Hill Creek to spawn, in the spring and fall respectively. Both species are stocked in Lake Ontario and are not native to this area. Current evidence suggests that Red Hill Creek does not support self-sustaining populations of Rainbow Trout or Chinook Salmon
- There is very little accessible wetland habitat at the mouth of Red Hill Creek. Wetlands are important for some fish species
- There are barriers to fish migration and movement in the Creek such as the channelization at Queenston Road and to some extent the culverts at King Street. Also, a concrete cap of the sanitary sewer south of King Street has eroded the Creek below it.

## What This Means:

- The decline in fish species in streams above the Niagara Escarpment is relatively recent, but the cause(s) of the decline has not been determined
- The creeks below the Niagara Escarpment are important to the fish community in Hamilton Harbour and Lake Ontario
- Fish such as Chinook Salmon are having difficulty migrating upstream in the fall due to the channel of Queenston Road. As part of their normal lifecycle, these fish die after spawning. Modifications to the channel appear to be allowing white suckers to swim upstream past the channel

## How Does This Connect to Other Themes?

- Water quality has the potential to affect fish populations and communities
- Surface and groundwater flows can affect fish directly by causing changes in habitat and habitat utilization especially in the lower Watershed as a result of frequency and volume of storm events
- Stream bank vegetation affects stream habitat by influencing water temperature and erosion

## Outstanding Questions:

- Fisheries biologists differ in their opinions about whether or not introduced species such as Rainbow Trout and Chinook Salmon should or could be sustained in the creek
- What was responsible for the disappearance of fish species above Albion Falls, and does the condition persist?

### Key Sources of Information and Data: Fisheries

1. Staton, S., *Red Hill Creek Aquatic Inventory*, In: Hamilton Naturalists Club, *Biological inventory of the Red Hill Valley*, p. 83-110, 1996
2. Hamilton Conservation Authority, *Hamilton Region Conservation Report*, Department of Energy and Resources Management, 43 pp., 1988
3. Portt, C. and Associates, *Fisheries Assessment for Drainage Works Proposed in the Redhill Creek Watershed - Phase 1 Inventory and Overview of Concerns*, 20 pp., 1992

LEGEND

#### SIGNIFICANT NATURAL ATTRIBUTES

- 1 TAKE ONBOARD  
"SHORTLINE"
- 2 CAREER PLAN  
FLEXIDPLAN  
FORUM 1. REMANENTS
- 3 NIAGARA "KARAPIN"  
COMPLEX COMMUNITIES

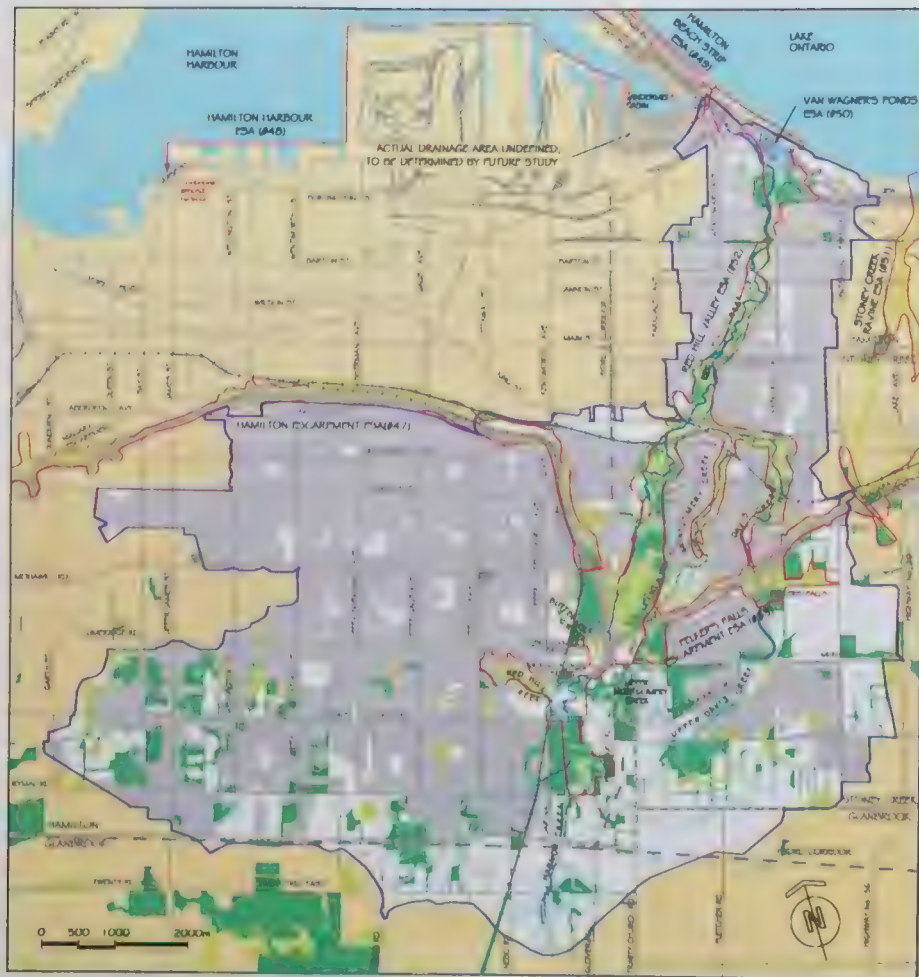
- ENVIRONMENTALLY  
SIGNIFICANT AREA  
BOUNDARIES  
(FEDERAL OFFICIAL  
PLAN DESIGNATIONS)

- NATURAL FORESTED AREA  
NATURAL NON FORESTED AREA  
WETLAND

- ### PRIMARY HABITAT CONSERVATION

- ## SECONDARY
- ### HABITAT CONSERVATION

- INTERMITTENT WATERCOURSES  
PERMANENT WATERCOURSES  
TOP OF VALLEY  
DEVELOPED AREAS



# TERRESTRIAL RESOURCES

## LEGEND

PROVINCIAL  
SIGNIFICANT WETLANDS

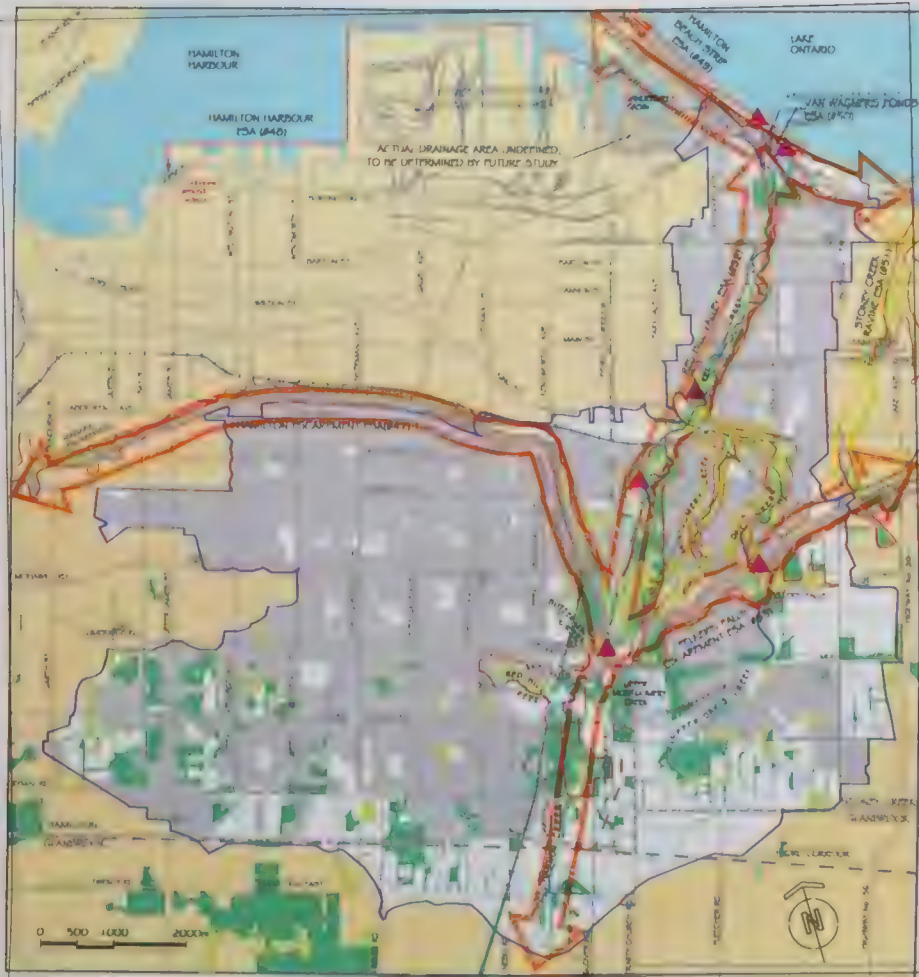
## SIGNIFICANT NATURAL ATTRIBUTES

- LAKE ONTARIO  
SHORELINE
- CARRIAGEWAY  
FLOODPLAIN  
FOREST REMNANTS
- NIAGARA PROCEMENT  
COMPLEX REMNANTS

- ENVIRONMENTALLY  
SENSITIVE AREA  
PLANNING  
OFFICIAL PLAN  
DETERMINATION
- NATURAL  
FORESTED AREA
- NATURAL  
NON-FORESTED AREA
- WETLAND

- PRIMARY  
HABITAT CORRIDOR
- SECONDARY  
HABITAT CORRIDOR

- WITHIN 100M WATERCOURSE
- PERMANENT WATERCOURSE
- TOP OF VALLEY
- DEVELOPED AREAS



### Why this theme is important

Vegetation and wildlife species form a "living web" which together with physical factors contribute to the ecological functions that sustain terrestrial ecosystems. Vegetation regulates microclimate, retains moisture, prevents erosion and provides habitat structure which sustains species biodiversity within the Watershed.

# Terrestrial Resources

## What We Know:

- Natural areas in the upper Watershed consist of highly fragmented pockets of forest, successional areas and wetlands
- Natural areas in the lower Watershed are restricted to creek valley lands, the Niagara Escarpment and Lake Ontario Shoreline
- Habitats include Carolinian floodplain forests, Escarpment complex communities, wetlands, plantations, successional meadows, and thickets that support vegetation and wildlife resources. Some of these habitats are considered rare in Canada, Ontario and the Region
- The creek systems in the lower Watershed link the Niagara Escarpment to the Lake Ontario Shoreline and function as habitat corridors for plants, birds, small mammals and other fauna
- The biophysical resources of the Red Hill Valley and Niagara Escarpment form the basis of their designation as Environmentally Significant Areas, Areas of Natural and Scientific Interest, and Provincially Significant Wetlands. In addition, the Niagara Escarpment has been designated as a United Nations World Biosphere Reserve
- The Red Hill Valley is particularly notable for rare plant communities, seasonal bird migrations, waterfowl nesting and staging (Van Wagner's Ponds and Marshes), and regional wildlife corridor functions

## What This Means:

- Terrestrial habitats in the lower Watershed and along the Niagara Escarpment are provincially and regionally important due to their size, connectivity, physical diversity, and scarcity
- Terrestrial habitats in the upper Watershed are small, fragmented and under documented

## How Does This Connect to Other Themes?

- The management of surface and groundwater resources affects the quality and health of all biological resources and is an integral component in linking terrestrial habitats. Vegetation along stream banks and wetlands is especially important to sustaining fish habitat
- Land use patterns (past, present and future) in the watershed control the viability of habitats and linkages, and are often incompatible with natural ecosystem functions

## Outstanding Questions:

- Terrestrial resources in the upper Watershed should be documented in more detail. Wildlife utilization of the Niagara Escarpment, Lake Ontario shoreline and upper Watershed areas require closer examination and better understanding

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## Key Sources of Information and Data: Terrestrial Resources

- Burr, L., *Summary of 1990 Breeding Bird Surveys in Hamilton Wentworth Environmentally Sensitive Areas*, Hamilton Naturalists' Club, 1990
- Dobos, R.Z., *Natural Significance of Van Wagner's Ponds*, Wood Duck 42(9): 148-151, 1989
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# WATER QUALITY

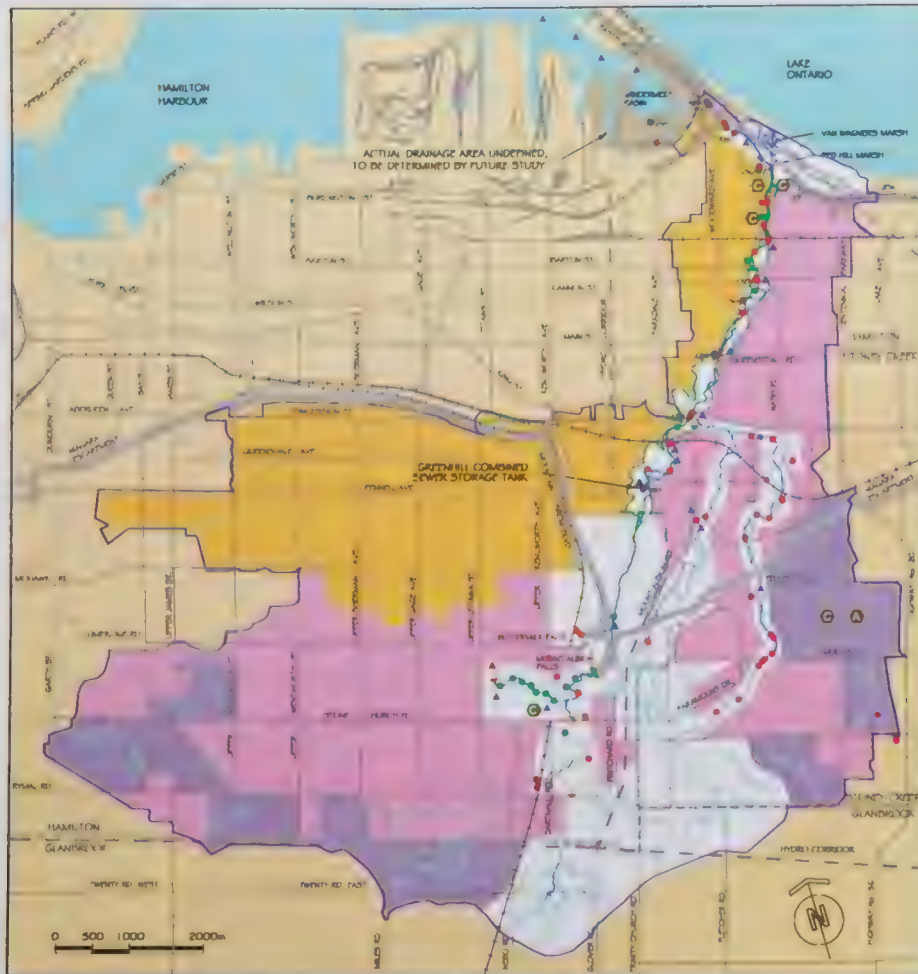
## LEGEND

- COMBINED SEWER DRAINAGE AREA
- SEPARATE SEWER DRAINAGE AREA
- NATURAL DRAINAGE AREA NOT INTERCEPTED BY STORM SEWER
- NATURAL DRAINAGE AREA NOT INTERCEPTED BY STORM SEWER
- COMBINED SEWER OVERLOADS
- OUTFALL LOCATIONS
- FORTHERS SAMPLING LOCATIONS

## WATER QUALITY MONITORING STATIONS SOURCE

- ONTARIO MINISTRY OF ENVIRONMENT & ENERGY
- RPD HILL VALLEY ENVIRONMENTAL REMEDIATION PROJECT
- OTHER WATER QUALITY MONITORING STATIONS

- ALTERNATIVE WATER SOURCES
- PERMANENT WATER COURSES
- TOP OF VALLEY
- ACTIVE LANDFILLS
- CLOSED LANDFILLS
- PROVINCIAL SIGNIFICANT WETLANDS



## Why this theme is important

The quality of water in Red Hill Creek and tributaries to some extent determines the health of a water-dependent biologic resources within the Watershed, such as fish, plant communities, wildlife and humans.

## What We Know:

### In-stream water quality of the Red Hill Creek is influenced by:

- Geologic conditions - Certain chemicals are naturally occurring in relatively high concentrations within the bedrock and soils of the Watershed. These include metals such as aluminum, strontium and cadmium.
- Urban land use - Runoff from paved surfaces contribute metals, polycyclic aromatic hydrocarbon (PAH)[product of combustion], nutrients and sediments.
- Servicing standard - Combined Sewer Overflows and storm sewers are sources of contaminants such as bacteria, metals, and PAH's.
- Agricultural use - Tillage and fertilizers associated with farming practices potentially contribute sediment, nutrients and pesticides.

### Water Quality in the Red Hill Creek is characterized as follows:

- Water quality is better than expected for an urban stream during low flow (non-storm) conditions. The primary contaminant at low flow conditions is faecal coliform (a bacterium). Most pollutants are within Provincial Water Quality Guidelines with the exception of some metals, coliform bacteria and nutrients.
- Water quality deteriorates significantly during rain storms.
- In-stream sediment sampling indicates that metal accumulation levels are typically low and do not pose a problem for aquatic life, however there are some minor exceedances of PAH's. Higher levels of metals and PAH's are found in sediments within the marsh area at the outlet of Red Hill Creek suggesting that frequent storm events may flush sediments through the upper watercourse system. Bacterial levels are extremely high during storms, probably due to contributions from combined and separate storm sewer systems.

- Bacterial levels tend to be higher than expected during low flow (non-storm) conditions, particularly from outfalls on the east side of Red Hill Creek, within the Davis Creek, and from the upper area of the Watershed (i.e. Albion Falls, Stonechurch Road and Upper Ottawa Street).
- Certain areas of the Watershed have been identified as high nutrient contributors (for instance the Hannon Creek for nitrates).
- Benthic invertebrate (insects that live in water) surveys tend to parallel chemical data, indicating pollutant tolerant species live in the upper and lower reaches of the Red Hill Creek, and more sensitive species are found in the middle reaches.

## What This Means:

- Water quality deteriorates significantly during storms. Storm pollutants include metals, PAH's, suspended sediment, and bacteria faecal coliforms. Faecal coliforms are usually above the level recommended for swimming.

## How Does This Connect to Other Themes?

Water quality directly affects aquatic and terrestrial resources, as well as human health when surface water comes into contact with humans.

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3. Ng, H.Y.F. and Marsalek, J., *Stormwater Discharges to Hamilton Harbour* Rivers Research Branch, National Water Research Institute, Canada Centre for Inland Waters, 1998.
4. Westdale, McMaster Report, Chedoke Creek and Vickers Water Quality, Fall 1994.
5. Lee, F., MacDuggall, A., Martinez, R., Pullen, J., and Senger, G., *Report on Contamination Entering Chedoke and Red Hill Creek*, Department of Biology, McMaster University, Summer 1995.
6. Marchewka, K., Martinez, R., Nahal, H. and Senger, G., *Report on Contamination in the Davis Creek Watershed and in the effluent of*

# Water Quality

## Outstanding Questions:

- What is the deposition process of PAH and metals and at what rate are PAH and metals washed off during rain storms?
- What is the source of nitrates in Hannon Creek?
- What is the source of bacterial contaminants particularly those on the east side of the Red Hill Creek, Davis Creek and upper areas of the Watershed and during low flow?
- What contribution do closed landfills make to water quality?

*the Woodland Sewage Treatment Plant, Department of Biology, McMaster University, Summer 1996.*

- Marsalek, J., Bowles, B., Mayer, T., Lawal, S., and Larkin, G., *Flow, metals and PAH's in Niagara ridge runoff*, National Water Research Institute, Environment Canada, 1996.
8. *Cornwall Rivers and Associated Biological Studies, Final Report: Design a Resource Documentation Report*, Ontario Street Landfill Rehabilitation Project, December 1996.
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15. Ministry of Environment and Energy, 1995, *Water Quality Monitoring Network Data for Red Hill Creek in digital format*, 1964 to 1991.
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## Key Sources of Information and Data:

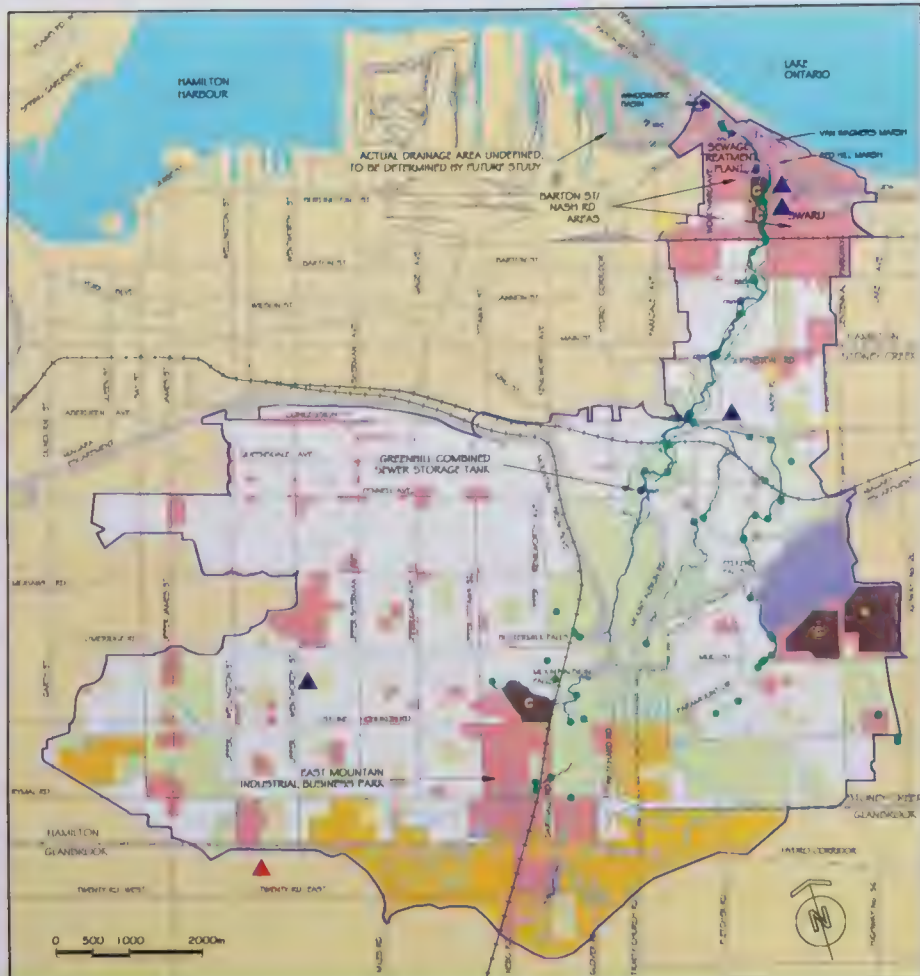
### Water Quality

1. Senger, J., and Rivier D., Larkin, J.J., and Johnson, B.D.,

# CONTAMINANTS

## LEGEND

- AGRICULTURAL LAND USE
- RESIDENTIAL LAND USE
- COMMERCIAL/INDUSTRIAL/INSTITUTIONAL LAND USES
- PARK/OPEN SPACE
- SECONDARY PLANT IN PROGRESS
- FORMER WASTE DISPOSAL SITES
- ACTIVE LANDFILLS
- FORMER WASTE DISPOSAL SITES (UNKNOWN AGE AND SIZE)
- KNOWN CONTAMINATED SITES
- SNOW DUMPING SITE
- OUTFALL LOCATIONS
- COMBINED SEWER OUTFALLS
- RAILWAY
- PROVINCIAL SIGNIFICANT WETLANDS
- INTERMITTENT WATER COURSES
- PERMANENT WATER COURSES
- TOP OF VALLEY



### Why this theme is important

An inventory of potential contaminant sources helps us understand the impacts of past, current and planned land use activity and ecosystem health in the Watershed.

### What We Know:

- Some potential sources of contamination are easily identified, however, the available data on actual discharges from each site varies for each source
  - abandoned/closed waste disposal sites (Upper Ottawa, Brampton, King and Rennie Streets, and Taro West landfill) With the exception of Taro West and part of Upper Ottawa, there are no leachate collection systems
  - combined and separate storm sewer outflows, road salting, and road runoff can contribute heavy metals, organics, bacteria and salt
  - chemical treatment of rail lines (there are two active rail lines and one abandoned line) may contribute pesticides and organics from the rail ties
  - air emissions from vehicles, and industries within and outside the watershed contribute a variety of air pollutants
  - Woodward Avenue Sewage Treatment Plant contributes phosphorus, bacteria, and metals and increases biological oxygen demand (BOD)
- Any land use is a potential source of contamination depending on how various chemicals and wastes are handled onsite
  - agricultural land for pesticides and fertilizer applications and storage (located in the headwaters area)
  - residential land use through lawn care products, oil from vehicles, paints, household hazardous wastes
  - over 400 commercial and industrial land uses, scattered through the Watershed but focused on the Mountain Industrial Park and Barton/Nash Road area, have the highest potential for contamination such as oils, greases, solvents, and metals. Of these, only five are known to be contaminated
- Many known or potential contaminant sources are within 1 km of the Red Hill Creek or its tributaries

### What This Means:

- Many activities in the Watershed have the potential for adversely impacting air, soil or water and this is typical of all municipalities. Some of the major known sources are in close proximity to the Red Hill Creek or its tributaries. The Creek therefore, is being affected by a number of known sources and is at risk of further contamination from a variety of potential sources.

### How Does This Connect to Other Themes?

- Soils, bedrock and groundwater all influence how contaminants move and the pathway that will be taken to surface water (creeks, ponds, wetlands)
- Fish, aquatic organisms and plants depend on surface and ground water quality
- Humans may be exposed to contaminants if in contact with contaminated water or exposed to airborne contaminants

### Key Sources of Information and Data: Contaminant Sources

1. Golder Associates Ltd., *Geotechnical Investigation Rennie Street Landfill North-South Parkways*, Golder Report No 881-1416-A, March 1989a
2. Golder Associates Ltd., *Geotechnical Infill Programme North-South Parkway Hamilton Wentworth Ontario*, Golder Report No 881-1416-1, March 1989b
3. Regional Municipality of Hamilton-Wentworth Regional Environment Department, *Report to Environmental Services Committee on Remedial Action Program: Closed Landfill Sites* (ENV 96-094), September 23, 1996
4. Conestoga-Rovers & Associates, *Brampton Street Landfill Investigation Final Report Mountain East-West and North-South Transportation Corridor*, April 1990
5. Procter & Redfern Limited, *Development of a Comprehensive Environmental Monitoring Program for the Open and Closed Landfill Sites Within Regional Jurisdiction*, January 1994
6. Jagger Huns Limited, *Leachate Management System Assessment former Brampton Street Landfill*, October 1994

# Contaminants

### Outstanding Questions:

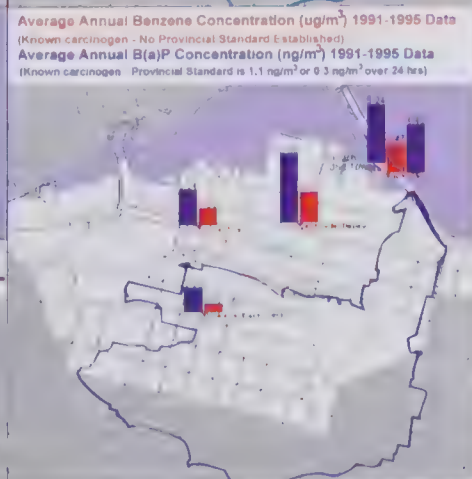
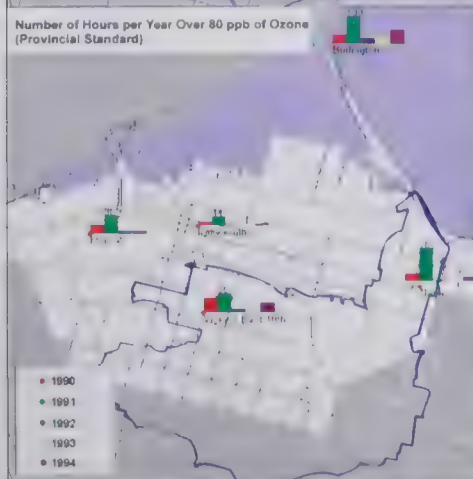
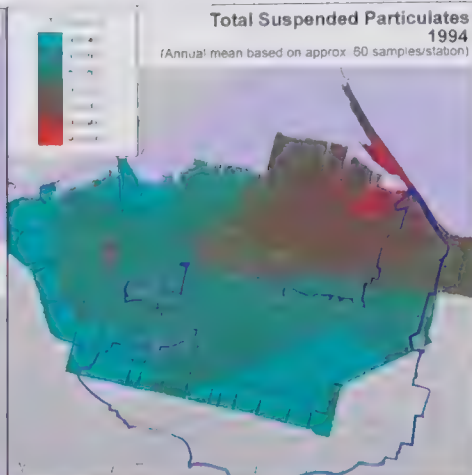
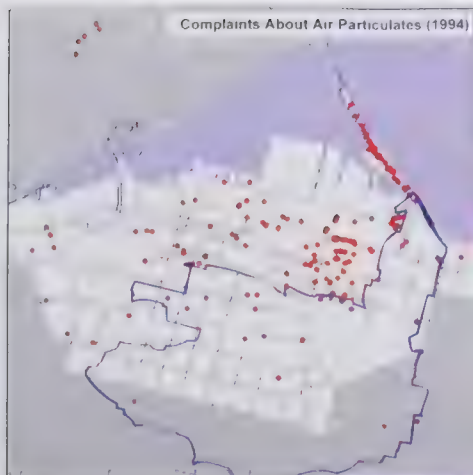
- There is no comprehensive survey or inventory of known contaminant sources in the Watershed
- There is incomplete knowledge of the types of contaminants discharging into the surface water and the sources of those contaminants
- There may be additional former waste disposal sites in the Watershed

Morrison Beatty Limited, *Hydrogeological Assessment of Brampton Street Landfill Site Region of Hamilton Wentworth*, December 1980

8. Peto Associates Limited, *Soil Investigation Report 90° Trunk Water Main*, July 1989a
9. Peto Associates Limited, *Soils Investigation Report Proposed 90° Trunk Water Main Brampton, Rennie Sts. & Nash Rd.*, July 1989b
10. Lee, F., MacDougall, A., Martinez, R., Pullen, J., and Surger, G., *Report on Contamination Entering Chedoke and Red Hill Creek*, Summer of 1995
11. Marchewka, K., Martinez, R., Nahal, H., and Surger, G., *Report on Contamination in the Davis Creek Watershed and in the Effluent of the Woodward Sewage Treatment Plant*, Summer of 1996
12. Personnel Communication, Mr. Carl Slater, Ministry of Environment and Energy, Hamilton District Office
13. Dillon Consulting Limited, *Region of Hamilton Wentworth, Liability Assessment of Regional Facilities*, July 1995
14. Regional Map Info Database, Regional Municipality of Hamilton-Wentworth Environmental Department
15. Ministry of Environment and Energy, *Waste Disposal Site Inventory*, 1991
16. Ministry of Environment and Energy, *Inventory of Coal Gasification Plant Waste Sites in Ontario*, Volumes 1 and 2, 1988
17. Ministry of Environment and Energy, *Inventory of Industrial Sites Producing or Using Coal Tar and Related Products in Ontario*, Volumes 1 and 2, 1989
18. Gartner Lee Limited, July 1996, *Site Assessment Report West Quarry Landfill Site 1996*
19. Gartner Lee Limited, *Taro East Landfill Annual Report*, 1996



# AIR QUALITY



### Why this theme is important

The quality of the air has an important influence on overall ecosystem including human health although the relationships are not well understood. While air movement does not respect watershed boundaries an understanding of air quality trends over the Watershed may inform future management decisions and choices.

# Air Quality

## What We Know:

- Information about air quality in the Watershed comes from monitoring done by the Ontario Ministry of Environment and Energy using monitoring stations in various locations around Hamilton. Data is not available for portions of the Watershed outside the Hamilton city boundary.
- The key air pollutants of concern in the Red Hill Creek Watershed are found across Hamilton-Wentworth as a whole. Air quality objectives (where they exist) for most of these pollutants are periodically exceeded in Hamilton. These key pollutants are:
  - particles (from coarse dust particles to tiny particles we breath known as PM10),
  - organics such as benzene and polycyclic aromatic hydrocarbons (PAH),
  - ozone and reduced sulphur compounds (TRS) such as hydrogen sulphide, which have an unpleasant odour
- The Red Hill Creek Watershed tends to record lower levels of these contaminants, with the exception of ozone. During muggy peak episodes in the summer, ozone levels are slightly higher on the Mountain because most of it comes from sources in the United States. Locally generated pollutants, such as TRS and particulates, are higher at the far north end of the Watershed, close to the Hamilton industrial area.
- The topography of the area (lake and escarpment) sometimes affects the movement of air pollutants. The Red Hill Valley is a particularly distinct land form but its effects on the atmosphere are not well understood.
- Temperature inversions in the spring lead to air pollution build-ups. The Watershed lies on the fringes during these events. Other areas are more directly affected.

- The SWARU incinerator, while highly visible, has completed a three phase control program to reduce particulate and acid gas emissions. Emissions are considered to be acceptable and effects on the surrounding environment are minimal. In spite of this, the community continues to have concerns about the incinerator.
- The Hamilton Air Quality Initiative (HAQI) has brought together a wide range of community partners to document and analyze current knowledge about the state of the air in Hamilton-Wentworth Region.

## What This Means:

- Information about air quality data is not available for the entire Watershed. Air quality in the Watershed must be studied using city-wide air quality patterns.
- Efforts to improve air quality within the Watershed must consider the role played by pollutants transported from other areas.

## How Does This Connect To Other Themes?

- Air pollution has effects on the natural environment and on human health. For example, elevated ozone levels can damage certain types of vegetation and cause acute human respiratory effects. Inhalable particulates (PM10 or less) have been shown to be related to increased mortality.
- Air pollution has the potential to affect water pollution but the relationships between air quality and water quality are not well known or understood.

## Outstanding Questions:

- What are the major sources of air pollutants in the Watershed? The percentage of air pollutants from industrial sources versus motor vehicles is a topic of interest to the HAQI. In the case of fine particles, for example, the percentage from sources have been estimated as follows: Industry - 16%, Urban (including vehicles) - 16%, Long Range Transport from other areas and normally occurring particles - 68%. The role played by other areas is significant in this example.
- What role is played by diesel trucks in terms of their contributions to PAH, benzene, and particulate levels? Data is currently not available.
- How does natural vegetation affect air quality including controlling dust and balancing oxygen in the atmosphere?
- How does the Red Hill Valley influence air movement?

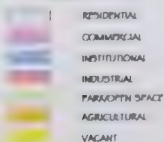
## Key Sources of Information and Data: Air Quality

1. Air Quality data provided by the Ontario Ministry of Environment and Energy.
2. Draft report of the Hamilton Air Quality Initiative. Final report expected late 1997.

# LAND USE

## LEGEND

### EXISTING LAND USE

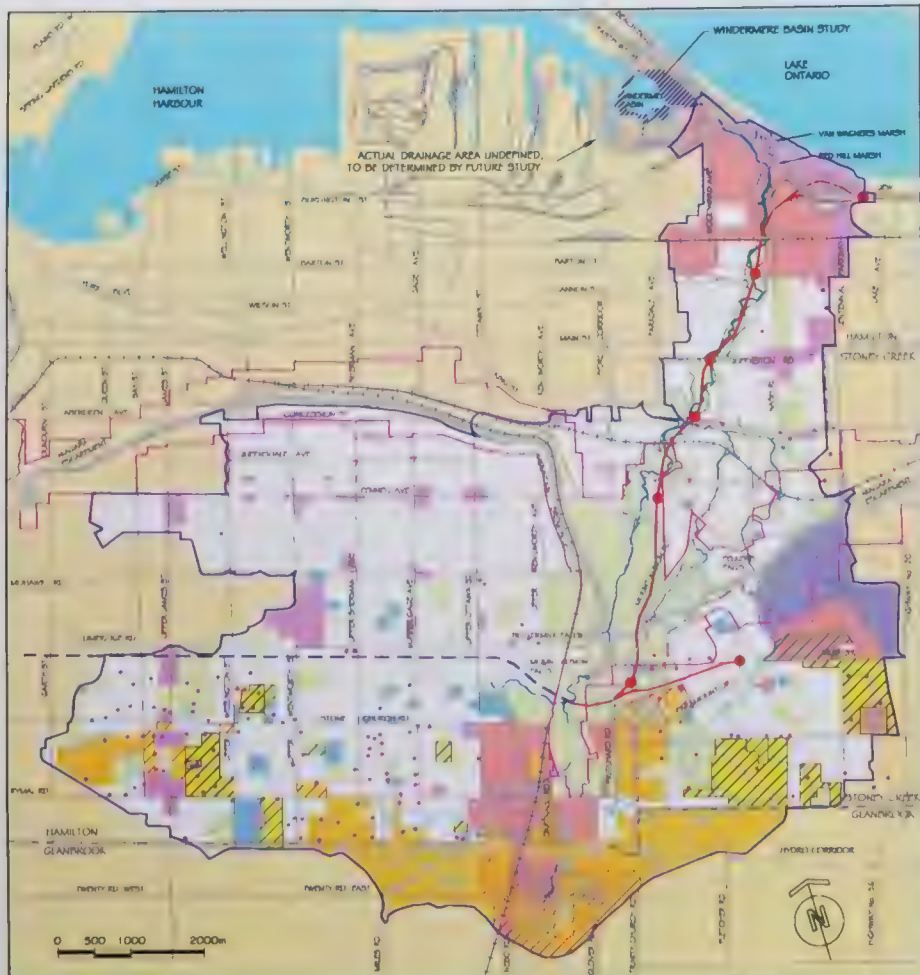


### FUTURE LAND USE



- SOURCE:
1. CITY OF HAMILTON, NEIGHBOURHOOD MAPS
  2. CITY OF HAMILTON, OFFICIAL PLAN
  3. CITY OF STONEY CREEK, OFFICIAL PLAN
  4. TOWNSHIP OF GLAMBECK, OFFICIAL PLAN
  5. REGIONAL MUNICIPALITY OF HAMILTON WINDERMERE OFFICIAL PLAN
- \* IMMEDIATE DEVELOPMENT  
 [Grey box] SECONDARY PLAN IN PROGRESS  
 [Dark Blue box] WINDERMERE BASIN STUDY  
 [Red line] ROADWAY (RUR 1) UNDER CONSTRUCTION  
 [Red line with dots] FUTURE ROADWAY CONSTRUCTION  
 [Red line with dots] NIAGARA ESCAPEMENT COMMISSION PLANNING AREA

- [Yellow box] PROVINCIAL SIGNIFICANT WETLANDS  
 [Blue box] INTERMITTENT WATERCOURSES  
 [Blue box] PERMANENT WATERCOURSES  
 [Blue box] TOP OF VALLEY



### Why this theme is important

Land use information about past, current and future development highlights the impact these activities have and will have on environment systems and functions in the watershed. An understanding of land use patterns will reveal the remaining opportunities to influence development activity.

# Land Use

## What We Know:

- Approximately 77% of the Watershed is developed. A further 23% of the watershed is designated for residential, commercial or industrial development in the Regional and local Official Plans
- Of this 100%, 12% is in various stages of development approval (development plans have been submitted, draft approved or registered)
- The major sewers (water and sanitary) required to service the remaining land designated for development have been constructed
- All of the land presently used for agriculture in the watershed in Stoney Creek and Hamilton are designated for urban development. Most of the agricultural land in the watershed within the Township of Glanbrook is designated for industrial development
- Neighbourhood Plans in the City of Hamilton, Secondary Plans in the City of Stoney Creek and the Industrial Park in the Township of Glanbrook describe how communities will be designed. Most of these plans have been adopted. Many of the neighbourhoods are fully built. The area south of Stone Church Road and east of the Red Hill Creek have the least developed neighbourhoods
- Neighbourhood and Secondary Plans have not traditionally incorporated environmental features into the design of communities. Urban development has traditionally dealt with storm water by constructing sewers that empty into the Red Hill Creek and its tributaries
- There are several major public works projects in the planning and design stages (Red Hill Creek Expressway, Upper Ottawa Landfill Site Remediation, Montgomery Creek Stormwater Management Plan, Rymal Road Stormwater Management Plan)

- The three local municipal Official Plans applying to the watershed are being reviewed over the next year. The City of Hamilton is preparing a land use plan for the Windermere Basin area. The Nash Neighbourhood Secondary Plan is underway in the City of Stoney Creek

## What This Means:

- Many of the decisions about land use form have been made and have been implemented, however there are still opportunities to influence future development. Public investments have been made in sewers for the areas yet to be developed.
- Most of the upper tributaries of the Red Hill Creek in the City of Hamilton have been piped to facilitate storm water removal from urban areas
- If development proceeds as per approved Official Plans, there will be no agricultural land remaining in the watershed with the exception of a small area adjacent to the Glanbrook Industrial Park. There are opportunities to make changes to the Official Plans through the current review process. Likewise there are opportunities to influence secondary and land use plans. Private sector development plans that have been given final approval by the municipalities can be changed at the discretion of the landowner. Public sector projects that have been approved by the appropriate decision-making authority can be constructed at any time. Major changes would require revisions to the original approval.

## How Does This Connect to Other Themes?

- The way in which land is developed affects all aspects of the natural and social environment. Development influences the amount and quality of ground and surface water that flows off land and into the nearby creeks, the amount of habitat available for birds and other wildlife, and the quality of water in the creeks for fish. Similarly, activities associated with land use can result in contamination of soil, air and water. Development can remove all traces of heritage from the landscape unless efforts are made to preserve significant buildings/features and to recognize or interpret historical places and events

## Outstanding Questions:

- What measures can be taken to reduce the negative environmental affects that existing, impending, and future development creates within the Red Hill Creek Watershed?
- What is the capacity of the sewer system to accommodate increased densities in built areas?
- What is the condition of the existing sewer system in older parts of the watershed?

## Key Sources of Information and Data: Land Use

1. City of Hamilton, Neighbourhood Maps
2. City of Hamilton, Official Plan
3. City of Stoney Creek, Official Plan
4. Township of Glanbrook, Official Plan
5. Regional Municipality of Hamilton-Wentworth, Official Plan
6. Regional Municipality of Hamilton-Wentworth, Active Subdivision and Condominium Applications



## 1983KND13

## INDEX PAGE

WATERWELN

POSTING MULTIPLE TRAILS

### EXISTING ON ROAD DUNE ROUTES

MUNICIPAL PARKS/OPEN SPACES

WALKER REAL ESTATE INC.

## OPEN SPACES

HYPERL (XEROX) (FUTURAL TRAILS)

INTERMITTENT WATER SUPPLY

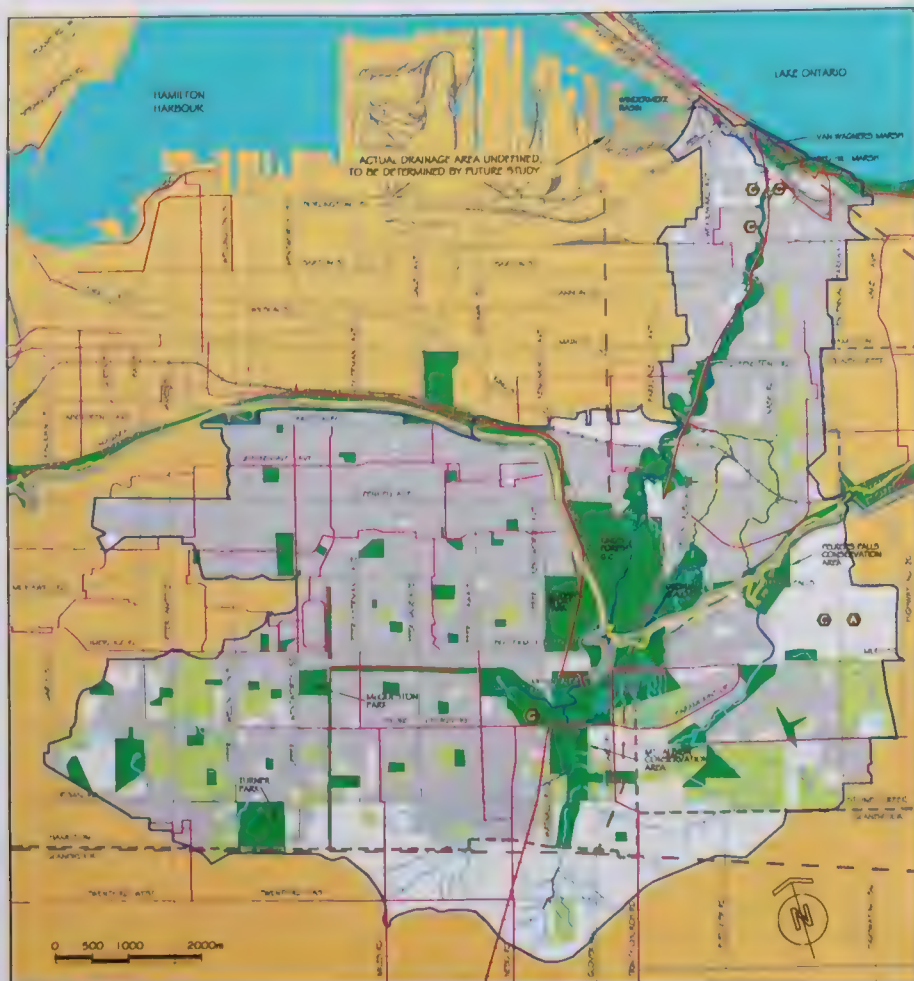
STEWART WATKINS

TOP OF VALLEY

PROVINCIAL  
SIGNIFICANT WETLANDS

A707 (AMF) 13

**CLOSED LAMINAE**



### Why this theme is important

Relaxation and physical activities are essential elements of healthy living and good quality of life. The open space and recreational opportunities located within the Watershed allow the community to interact with their natural environment and offer a range of social, economic and environmental benefits.

# Trails, Open Space & Recreation

## What We Know:

- The Watershed contains an important open space network connecting the Lake Ontario Waterfront, the Red Hill Valley and the Niagara Escarpment. There are two Conservation Areas as well as a variety of municipal parks and recreational facilities.
- There is an extensive network of on and off-street walking and biking trails with linkages outside the Watershed. The Bruce Trail and Lake Ontario Waterfront Trail, pass through the Watershed.
- Residential development within the Watershed will generate additional demand for open space and recreational facilities. The presence of major trails, recreation and open space systems will continue to attract users from outside the Watershed. Potential economic benefits associated with these systems have not been documented.
- Intensive recreational use has caused damage to sensitive natural areas. Conflicts between recreational activities such as hiking and biking have also been reported.
- There is at present no permanent facility to interpret and promote the highly significant natural and cultural resources of the Watershed.
- Community groups are playing an increasing role in developing, restoring, maintaining and monitoring parks and open space areas.
- Parks and recreation master plans have been developed for portions of the watershed and the Hamilton Region Conservation Authority is presently developing master plans for Mt. Albion Conservation Area and the Caledonia Rail Trail.

## What this Means:

- Key public and private recreational facilities, as well as open space and trail systems are located in or near the Red Hill Valley making it an important node for a variety of activities.
- Natural areas within the Watershed provide social and economic as well as ecological benefits. A diversity of opportunities is especially important for those who do not have access to areas outside the Watershed.
- Design, development, maintenance and use of trails and other facilities must have regard for environmental impacts.
- Planning for recreation and open space must consider changing preferences and interests within the watershed and among outside users attracted to the amenities of the Watershed.

## How Does This Connect to Other Themes?

- All types of recreational activities can impact the environment including water quality, terrestrial and aquatic habitat.
- Open space and recreational opportunities are important to the quality of life in the community and have economic, social and environmental benefits.

## Outstanding Questions:

- There is a lack of comprehensive data on recreational needs in the Watershed and the relative importance of various activities. For example, what impact will increasing use of the Bruce and Waterfront Trails and rail trails have on the Watershed?
- Will recreational activity have to be limited in some of the significant natural areas. What economic development opportunities are associated with open space and recreation in the Watershed?

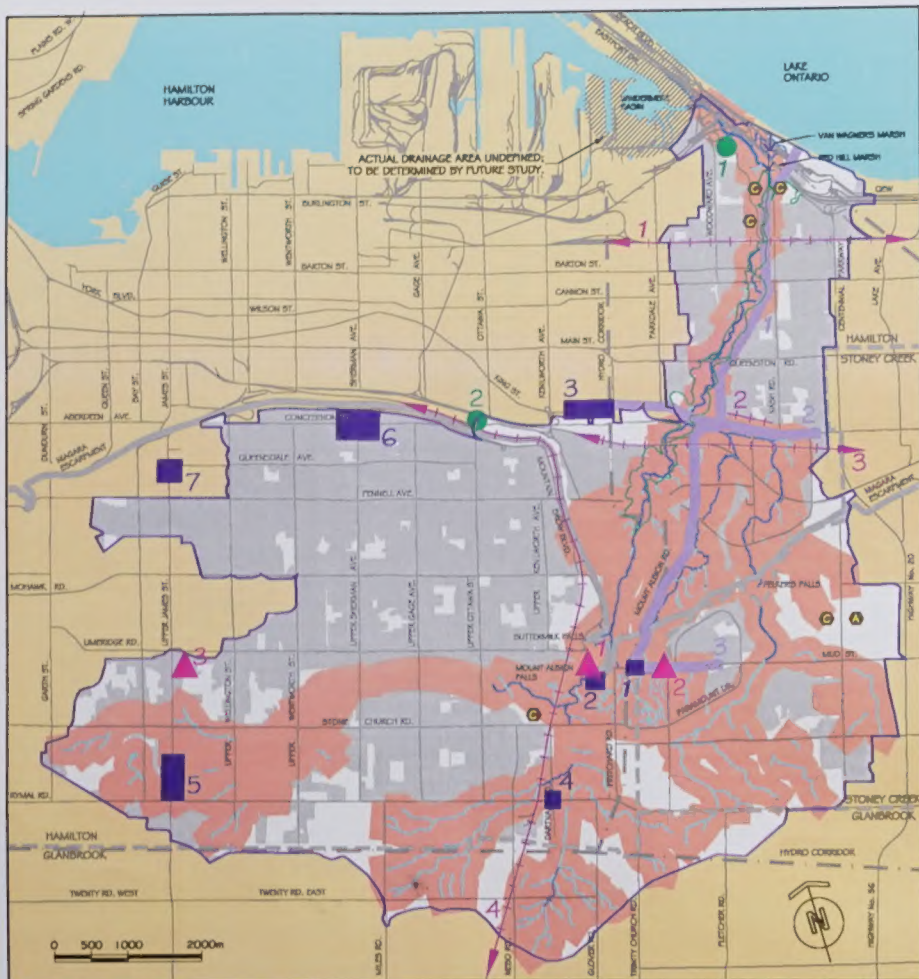
## Key Sources of Information and Data: Trails, Open Space and Recreation

1. City of Hamilton, *Red Hill Creek Recreation and Open Space Master Plan*, 1989
2. City of Stoney Creek, *Multi-Use Pathway, Pedestrian and Cycling Route Master Plan Study*, 1995
3. City of Stoney Creek, *Recreation and Culture Master Plan*, 1988
4. Regional Municipality of Hamilton-Wentworth and the City of Hamilton *Bikeways and Parks of Hamilton-Wentworth 1996* (Mapping)
5. Hamilton Region Conservation Authority, City of Hamilton, Province of Ontario and the Waterfront Regeneration Trust, *Red Hill Valley Restoration Project*, 1996 (Mapping)
6. Hamilton Region Conservation Authority, *Digital Trails Map*, Undated (Mapping)

# CULTURAL HERITAGE

## LEGEND

- ZONE OF ARCHAEOLOGICAL POTENTIAL
- CENTRES OF SETTLEMENT (EARLY 1800s-1900s)
  1. MOUNT ALBION
  2. ALBION FALLS
  3. BARTONVILLE
  4. HARBOR
  5. RYCKMANS' CORNERS
  6. MOUNT HAMILTON
  7. CHEDoke
- INDUSTRIAL ACTIVITY
  1. ALBION FALLS
  2. GRASSIE BLACKSMITH
  3. MARSHALL LIME KILNS
- TRANSPORTATION: EARLY TRAILS & ROADS (1790s - 1820s)
  1. "RED HILL CREEK" ROAD
  2. KING STREET
  3. MUD STREET
- PUBLIC AND INSTITUTIONAL WORKS
  1. CITY OF HAMILTON WATER WORKS (1859)
  2. WATER WORKS RESERVOIR (1859)
- RAILWAYS
  1. GREAT WESTERN RAILWAY
  2. HAMILTON, GORMEY, & BEAMSVILLE
  3. TORONTO, HAMILTON, & BUFFALO RAILWAY
  4. HAMILTON AND LAKE PRESCOTT/STATION AND NORTHWESTERN RAILWAY
- INTERMITTENT WATERCOURSES
- PERMANENT WATERCOURSES
- TOP OF VALLEY
- CLOSED LANDFILLS
- ACTIVE LANDFILLS
- PROVINCIAL SIGNIFICANT WETLANDS
- DEVELOPED AREAS





### Why this theme is important

Wise management of the Watershed's cultural heritage resources will ensure that valued, built features, landscapes and archaeological sites are conserved and protected in a sound and prudent manner.

# Cultural Heritage

## What we know:

- A number of recent studies have identified both archaeological and built heritage features in the Red Hill Creek Watershed. Most of the work has been focussed on the Valley. However, no comprehensive archaeological or heritage inventory for the entire Watershed has ever been completed.
- The Red Hill Creek Watershed has attracted human settlement for the past 11,000 years. Over 100 archaeological sites from the Paleo-Indian period to the 19th century Euro-Canadian settlement period have been found in the Watershed. Many of these sites were highly attractive for settlement and were consequently re-occupied on many occasions.
- The built heritage features of the Watershed include engineering structures such as road and rail bridges, the remnants of industrial facilities, such as the Grassie blacksmith shop and the Marshall lime kilns, and the internationally significant 1859 Hamilton Pump House, as well as many houses and farmsteads. Many early Euro-Canadian settlement sites, such as the Government House at the mouth of the Red Hill Creek, have been lost. Others remain only as names of streets or places.
- Although much of the Valley looks natural today, from the 1860s to the 1930s, it was an agriculturally prosperous landscape. The mill at Albion Falls was a prominent industrial landmark for many years.
- Areas of archaeological potential occur along all watercourses.

## What This Means:

- Our knowledge of the cultural heritage is far from complete although the Valley appears to be well documented. Each municipality documents cultural heritage differently.
- Archaeological sites have traditionally been protected or excavated prior to construction. Built heritage features have been protected, incorporated into new structures, or demolished. Most heritage features are photographed and recorded prior to any changes to property. Some heritage buildings have been moved to other locations.
- Consistent guidelines and planning recommendations have not been developed to ensure the preservation, protection and enhancement of heritage features during the development process.
- While development often results in a greater understanding of our past (through archeological excavation and built heritage research), the evidence of our past is no longer as visible in the landscape. Community knowledge about cultural heritage tends to be lost unless promoted.

## How Does This Connect To Other Themes?

- The location of water sources, soil types and vegetation are indicative of past uses of the land. Archaeological studies often provide insights into the natural heritage of an area, by providing data concerning past plant and animal communities.
- Recreational trails and community groups can promote cultural heritage through interpretive signs, walks, etc.

## Outstanding Questions:

- Are there community organizations or institutions that could promote cultural heritage through displays of heritage/archaeological artifacts?
- How could heritage be promoted in new development?
- Is there a need to develop consistent municipal approaches to inventories?

Culture and Recreation, Toronto, Ontario, 1996.

4. Mills, John M., *Catawact Tracian, The Railways of Hamilton*, Canadian Tracian Series, Toronto, 1971.
5. Weaver, John C., *Hamilton: An Illustrated History*, James Lorimer and Co. & the National Museum of Man, 1982.

## Maps:

1. 1799 Plan of the Long Beach together with the Lots No. 27 & half of 26 in Salfleet, belonging to the Government House at the Head of Lake Ontario, Y25, John Stegmann, Surveyor, July 11, 1799.
2. 1815 Map of the Niagara District in Upper Canada, by Lieutenant W. A. Nesfield, drawn partly from Survey & from documents obtained from the Qr Mr Genls Department.
3. 1819 Assessment, Township of Salfleet, Hamilton Public Library.
4. Sutees, R., County of Wentworth, 1859, Ontario Archives.
5. 1850 Map of the Principal Communications in Canada West Compiled from the most authentic sources, actual Surveys, District maps etc., etc. by Major Baron de Rottenberg Ast Quarter Mr Genl.
6. Illustrated Historical Atlas of the County of Wentworth. Page and Smith, Toronto, 1875, Reprint, 1971.
7. Imperial Atlas of Wentworth County, The Scarborough Company, Hamilton, 1903.
8. NTS Topographical Series: (1:63,360 and 1:50,000 Scale), Grimsby Sheet and Hamilton Sheet; various dates from 1907 to 1952.

## Key Sources of Information and Data: Cultural Heritage

1. Canadian Heritage Information Network n.d. Archaeological Site Record Forms. Computer database on file, Ministry of Citizenship, Culture and Recreation, Toronto, Ontario.
2. Johnston, C.M., *The Head of the Lake: A History of*

Wentworth County, Hamilton, Wentworth County Council, 1958.

3. Mayer Heritage Consultants Inc., *Archaeological Survey of the Redbill Creek Valley*, City of Hamilton. Unpublished report on file, Ministry of Citizenship,



As this Report shows, the Red Hill Creek Watershed is rich with natural areas and species, interesting communities and structures or sites of historical interest. Here is a checklist to guide your explorations of the Watershed.

# Watershed Check List

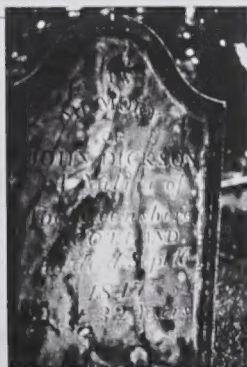
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## Memories of the Past

Have you seen these important heritage structures and sites?

- ☐ J.W. Kerr House, 988 Concession Street
- ☐ Parsonage, 1073 West Fifth Street
- ☐ Hamilton Pumphouse (Built 1859 and 1913) Woodward Avenue
- ☐ Mount Albion Cemetery, Upper Mount Albion Road
- ☐ Felker Cemetery, 120 Mud Street
- ☐ Hannon Free Methodist Church, 1969 Rymal Road (Hwy. 53)
- ☐ Glanford and Barton Schoolhouse (Intersection Nebo and Twenty Roads)
- ☐ Old Mill Wheel, Albion Falls
- ☐ Grassie Blacksmith Shop

As you travel around the Watershed you might see old mill ponds, remnants of orchards, silos or barns. What does that tell you about the history of the watershed?



## Flying Jewels

Have you seen these butterflies? These are some of the more common of the 47 species that can be found in the Watershed.

- ☐ Black Swallowtail
- ☐ Cabbage White
- ☐ European Skipper
- ☐ Red Spotted Purple
- ☐ Banded Hairstreak
- ☐ Eastern Tailed Blue
- ☐ Great Spangled Fritillary
- ☐ Mourning Cloak
- ☐ Viceroy
- ☐ Monarch

## Hidden Communities

At one time the Watershed was mostly farmland or open, natural areas with small communities here and there. Do you know where to find these early settlements?

- ☐ Mount Albion
- ☐ Albion Falls
- ☐ Hannon
- ☐ Ryckman's Corners
- ☐ Mount Hamilton
- ☐ Bartonville

When you find them look around. Do you see signs on roads or businesses which still use the old names?



## Ten Things You Can Do To Improve Your Watershed

- ✓ Never dump oil or household toxic chemicals into the street gutter
- ✓ Fix oil and antifreeze leaks on your car
- ✓ Plant trees, especially species native to your area
- ✓ Shovel sidewalks clear and reduce your use of salt
- ✓ Wash your car at a commercial car wash or on a grassed area
- ✓ Use wildflowers native to this area in your garden
- ✓ Leave your car at home one day a week when weather permits
- ✓ Never dump grass clippings or waste over the Escarpment or into streams
- ✓ Plant butterfly friendly flowers
- ✓ Volunteer to clean-up or maintain a park or natural area near you